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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/750,567	12/26/2000	Edmund J. Mozeleski	99B065/2	6491

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EXAMINER

OH, TAYLOR V

ART UNIT	PAPER NUMBER
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1625

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/750,567

**Applicant(s)**

MOZELESKI ET AL.

**Examiner**

Taylor Victor Oh

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4, 7-12 and 15-58 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-12 and 15-58 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**Final Rejection**

**The Status of Claims**

Claims 1-4, 7-12, and 15-58 are pending.

Claims 1-4, 7-12, and 15-58 have been rejected.

**Claim Objections**

Claim 1 is objected to because of the following informalities:

The phrase " acid compositon" is recited. The term "compositon" is misspelled. Appropriate spelling correction is required.

**Claim Rejections-35 USC 112**

1. Applicants' argument filed 11/05/04 have been fully considered but they are not persuasive.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The rejection of claims 1, 11, 15-16, 18-20, 24, 31-32, 36-37, 50, 52-54, and 58 has been withdrawn due to the modification made in the amendment.

**Claim Rejections-35 USC 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The rejection of Claims 1-4, 7-12, 15-23, and 36 under 35 U.S.C. 103(a) as being unpatentable over Jung et al (U.S. 4,311,851) in view of Takahashi et al (U.S. 4,894,188) has been maintained for the reasons of the record on 8/10/04.

3. The rejection of Claims 24-35 and 37-58 under 35 U.S.C. 103(a) as being unpatentable over Takahashi et al (U.S. 4,894,188) in view of Jung et al (U.S. 4,311,851) has been maintained for the reasons of the record on 8/10/04.

**Applicants' Argument**

Applicants argue the following issues:

- a. The combination of the catalyst of Takahashi with the process of Jung will lead to methods of preparing carboxylic acids , not Applicants claimed esters;
- b. There is no motivation to combine Takahashi and Jung to form esters from olefins since Jung avoids water and Takahashi requires water ;

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- c. Neither Jung nor Takahashi discloses an acid composition comprising  $\text{BF}_3\text{ROH}$  wherein the molar ratio  $\text{ROH}:\text{BF}_3$  is from 2:1 to 4:1; and
- d. Jung specifically states that a mixture of  $\text{BF}_3\text{2CH}_3\text{OH}$  and  $\text{BF}_3\text{CH}_3\text{OH}$  is non-selective to the desired product and of relatively low activity in contrast to the 1:1 molar ratio catalyst.

Applicants' arguments have been noted, but the arguments are not persuasive.

First, regarding the first and second arguments, the Examiner has noted applicants' arguments. However, Jung et al does teaches the preparation of carboxylic acid esters with  $\text{BF}_3$  alcohol complex catalyst (see col. 1, lines 1-4) as well as the recovery and recycle of  $\text{BF}_3$  alcohol complex catalyst used in the carbonylation of olefins such as ethylene and propylene to produce carboxylic acid esters. Takahashi et al expressly teaches the process of producing the methyl pivalate (see col. 5, table 2, Ex. No. 8) by reacting ethylene, propylene, isobutylene or methyl-t-butyl ether (MTBE) (see col. 2, lines 19-25) with carbon monoxide in the presence of the  $\text{BF}_3$  catalyst selected from the acid catalyst group consisting of sulfuric acid, hydrogen fluoride, and boron trifluoride.

Both processes have commonly related to the production of carboxylic ester in a similar reaction condition: common reactants, olefins, i.e. such as ethylene, propylene, isobutylene or methyl-t-butyl ether and carbon monoxide in the presence of an acid catalyst such as sulfuric acid, hydrogen fluoride, and boron trifluoride with an

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equivalent usage among them as indicated in the Takahashi et al. Therefore, there is a motivation to combine Jung et al and Takahashi et al.

Therefore, it would have been obvious to the skillful artisan in the art to be motivated to employ Takahashi's et al methyl-t-butyl ether (MTBE) as a starting material for the preparation of methyl pivalate in the Jung et al process because the skilled artisan in the art would expect such a modification to be successful to the production of carboxylic acid esters in the presence of boron trifluoride as indicated in the Takahashi et al.

Regarding the use of water in the Takahashi process whereas the lack of using water in the Jung process, according to the Jung process, water is added to the condensate of the azeotrope in a separate vessel where an aqueous methanol phase and a paraffin phase are formed; the aqueous methanol phase is distilled further to recover methanol as an overhead product for recycle (see col. 7 ,lines 5-10).

The Takahashi process is involved in the use of water in the process of producing fatty acids or their derivatives by reacting an olefin such as isobutylene (see col. 2 ,line 25), carbon monoxide , and water or reacting an alcohol or its derivative such as methyl-t-butyl ether (MTBE) and carbon monoxide in the presence of hydrogen fluoride catalyst (see col. 2 , lines 7-11). The Takahashi process not only produces the carboxylic acid, such as pivalic acid, but also the carboxylic ester in the presence of water shown in table 2 (see col. 5 ex. 8). From this , it becomes clear that regardless of the presence of water, the carboxylic ester does form in both processes. Therefore, applicants' argument is not relevant to the issue of the claim.

Second, regarding the third argument, the Examiner has noted applicants' arguments. However, with respect to the molar ratio of ROH: BF<sub>3</sub> from 2 :1 to 4:1, the Jung et al does teach the preparation of carboxylic acid esters with BF<sub>3</sub> alcohol complex catalyst prepared in using ratios of from 0.75 to 2 moles of boron trifluoride per an alcohol; in other words, the molar ratio of ROH: BF<sub>3</sub> is from 1.3 :1 to 1: 2. The claimed ranges and prior art do not overlap but are so close that one skilled in the art would have expected to have the similar reaction condition in the absence of an unexpected result; a prima facie case of obviousness may be overcome by a showing of the unexpected result based on the side-by-side comparison data between the prior art and the current invention.

Third, regarding the fourth argument, the Examiner has noted applicants' arguments. However, as applicants have indicated that, Jung discloses the mixture of BF<sub>3</sub>·2CH<sub>3</sub>OH and BF<sub>3</sub>·CH<sub>3</sub>OH which is non-selective to the desired product and of relatively low activity in contrast to the 1:1 molar ratio catalyst, but the Jung does not reveal anything about the reactivity of the single BF<sub>3</sub>·2CH<sub>3</sub>OH catalyst in the process.

Therefore, applicants' argument is not persuasive and the prior art is still applicable to the current invention.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

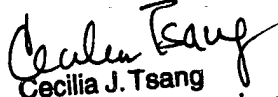


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tsang Cecilia can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

\*\*\*Myron v. Oh  
2/3/05

  
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